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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,548

07/19/2006

Shunji Kikuhara

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54630 7590 12/09/2008

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EXAMINER

LIAO, DIANA J

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

12/09/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,548	<b>Applicant(s)</b> KIKUHARA ET AL.	
	<b>Examiner</b> DIANA J. LIAO	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/19/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claim 18 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/9/2008.

2. Applicant's election without traverse of claims 1-17, 19 and 20 in the reply filed on 10/9/2008 is acknowledged.

### ***Priority***

3. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 2004-367724 (Japan), filed on 12/20/2004.

### ***Information Disclosure Statement***

4. The information disclosure statement (IDS) submitted on 7/19/2006 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Silver (US 6,455,182) in view of Marecot, et al. (US 5,413,984).

Silver '182 teaches a catalyst composition for a shift converter containing a ceria-zirconia composite and a supported noble metal. Shift converters are used to reduce the CO content in process gases. (col 1, lines 35-41) The composition includes at least ceria and zirconia. (col 2, lines 57-61) A third metal oxide may also be added, such as praseodymium, lanthanum, neodymium or hafnium oxide to form a ternary mix. (col 3, lines 1-3) In terms of mole %, ceria is preferably present from 50-70%, zirconia from 50-30% and the third metal oxide is 0-10%. Noble metal is to be supported in an amount of 0.1-2.0%. The amount of zirconia is adjusted to stabilize the catalyst without running the risk of being present in excess and creating separate zirconia and ceria phases. (col 4, lines 41-52) The zirconia increases the oxygen vacancies and activity of the composition as well as the durability of the ceria. (col 2, lines 61-65) The catalytic noble metals are chosen from a group including platinum, ruthenium, iridium, and silver.

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Metals may be used in combination. (col 6, lines 20-31) Alumina may be added to especially if the composition is to be used as a coating. (col 3, lines 3-5) An example composition uses a MEI 01023 pellet material which is an oxide mix of ceria and zirconia of 58 mol% Ce and 42 mol% Zr. (col 4, lines 55-60) Calculated as  $\text{CeO}_2$  and  $\text{ZrO}_2$ , this corresponds to an amount of 65.9 wt.% ceria and 34.1 wt.% of zirconia.

Regarding the metal oxides in the carrier, Silver '182 is found to teach an example within the claimed range, and also to include an additional oxide such as lanthanum oxide. Silver '182 also teaches that the third oxide be present in an amount of up to 10%, which significantly overlaps with the claimed range of 0.1-15 wt.%. Silver '182 is also found to teach an overlapping range for the ceria content of the carrier for values other than the example composition. The mole % of cerium in the composition is 50-70%, and considering the higher molar mass of cerium over zirconium, for example, the wt.% of ceria will be higher than 50-70%. When the range of the prior art overlaps with that of the claimed range, a *prima facie* case of obviousness is created.

Regarding washcoating onto a metal base, Silver '182 does not mention the type of base used. However, Silver '182 does teach the use of the composition as a washcoat, preferably with the use of alumina in that case. The type of substrate the washcoat is applied to is not discussed. However, metal substrates are well known in the art and it would have been obvious to one of ordinary skill to choose an appropriate substrate. Metallic substrates are known for reaching high temperatures quickly and having low deterioration rates at high temperatures, for example. Therefore, applying a washcoat to a metallic base is not found patentable over the prior art.

Silver '182 does not teach a catalyst for treating a suspended particulate matter. However, this is an intended use of the catalyst, and thus it is not given patentable weight as long as the general composition of the catalyst is found. The broadest claim only requires a ceria containing composite oxide. In addition, since a substantially similar compound is described in the prior art, the ability to treat suspended particular matter is found to be inherent.

Regarding the identity of the supported precious metal or an oxide thereof, Silver '182 recites the claimed metals of ruthenium, platinum, iridium, and silver. The metals are also taught to be supported in an amount of 0.1-2.0 mol%, which would overlap with the claimed range of 0.1 to 10 wt.%. Silver '182 teaches that a combination of metals may be supported onto the catalyst, but does not specify the ratios of specific metals to one another.

Marecot '984 teaches the known practice in the art to utilize more than one catalytic species to increase the scope of catalyst activity. Marecot '984 teaches the creation of a multi-metal catalyst containing at least one metal A and at least one metal B. (claim 1) The metals are chosen from Groups VIII and IB. These groups include iron, ruthenium, iridium, platinum, and silver. (col 3, lines 22-25) Porous carriers known in the art for such catalyst compositions include oxides of cerium or zirconium. (col 1, lines 32-37) Multimetal catalysts are often employed in order to broaden the range of activity of the catalyst. Examples of improved catalytic activity are discussed in different

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applications. (col 1, lines 14-23) The method of Marecot '984 may be utilized for a variety of catalysts, including the conversion of exhaust fumes containing carbon monoxide or soot. (col 5, lines 23-28)

Therefore, regarding the choice of metals and the ratios, it would have been obvious to utilize two or more catalytic species in the composition of Silver '182. Upon choosing the more than one catalytic metal in view of the teaching of Marecot '984, it would have been obvious to one of ordinary skill in the art to optimize the catalyst composition according to the intended use.

Therefore, due to the motivation to optimize the catalytic species component ratios and content, claims 1-17, 19 and 20 are not found patentable over the prior art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIANA J. LIAO whose telephone number is (571)270-3592. The examiner can normally be reached on Monday - Friday 8:00am to 5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngoc-Yen M. Nguyen/  
Primary Examiner, Art Unit 1793

DJL